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ABSTRACT

This study tested opposing predictions made by Gamson's Minimum Resource Theory and equity theory concerning the type of coalitions that will be formed when members of a triad expect that rewards will be correlated with amounts of individual resources. Results supported equity theory in that subjects, whose work on a pretask was used as the basis for assigning resources in a bargaining game, formed conservative (strong against weak) coalitions. When subjects either did not work or were paid prior to playing the game, results replicated past research in that there was a tendency to form revolutionary (weak against strong) coalitions. Findings were discussed in terms of their implications for the generality of existing theories of coalition formation. (Author)

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Equity and the Formation of Revolutionary and Conservative Coalitions in Triads[1]

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The present research was an investigation of the role that the norm of equity plays in the formation of coalitions within triads. Past studies of coalition formation (e.g., Kelley & Arrowood, 1960; Vinacke & Arkoff, 1957) to a large extent have focused on the effect of differences in apparent power. Typically, power is defined as resources which enable their owner to achieve some goal; the greater the resources, the more easily the goal is reached.

In one case of Caplow's (1956, 1968) Type 5 triad, resources are distributed in the ratios 4/3/2. Thus, the person with the greatest resources (4) will reach the goal first unless two participants pool their resources--i.e., form a coalition. In Type 5 triads, any coalition will triumph, since any combination of two sets of resources (e.g., 2+3, 2+4, or 3+4) will be greater than the resources of the isolate. In spite of this equality in potential effectiveness, subjects in past studies have tended to overchoose the 2-3 combination and form what Caplow (1968) has termed "revolutionary" coalitions. This coalition is revolutionary because the two weaker parties join together to "overthrow" the person who originally had the most resources.

A number of explanations have been advanced in attempts to understand why subjects favor the revolutionary coalition (e.g., Caplow, 1956, 1968; Gamson, 1961, 1964; Komorita & Chertkoff, 1973; Vinacke, 1969). Of most relevance to the present research is Gamson's (1964) Minimum Resource Theory, which proposes that persons will tend to form that winning coalition in which the sum of the resources is the least, since "any participant will expect others to demand from a coalition a share of the payoff proportional to the amount of resources which they contribute to a coalition [p.87]." Thus, in the 4/3/2

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Type 5 triad, persons tend to form revolutionary coalitions because the minimum sum of the resources (5) is also a winning coalition (since 5 > 4). Gamson (1964, pp. 103-104) further proposes that Minimum Resource Theory should be more applicable--i.e., the tendency to form revolutionary coalitions should be greater--when persons (a) are highly motivated for the reward, and (b) have some basis for the perception that the magnitude of their resources should determine the magnitude of their reward. Note that both of these hypotheses are based on the assumption that persons are motivated solely to maximize self-gain.

Gamson's second hypothesis is of particular interest because it directly contradicts a prediction that can be derived from equity theory (Adams, 1965; Homans, 1961). Equity theory posits the existence of a norm which prescribes that persons should be satisfied with a distribution of rewards to the extent that this division is congruent with the inputs of participants (i.e., their perceived contributions). Recently, studies (e.g., Lane, Messé, & Phillips, 1971; Leventhal & Michaels, 1969; Messé, 1971) have demonstrated that the norm of equity influences directly the manner in which persons allocate payment to themselves and others as a function of relative inputs. This evidence suggests that the norm should be applicable to coalition formation situations as well, since, in these settings, subjects are always required to distribute some type of reward.

In past studies of coalition formation (e.g., Vinacke & Arkoff, 1957), resources have been assigned at random, and, hence, they were uncorrelated with inputs--which, typically, were equal, since all subjects performed exactly the same tasks. If, however, conditions were imposed such that resources were correlated legitimately with inputs, then--as opposed to Gamson's speculation--equity theory would predict that subjects would adhere to the norm and act to distribute rewards as a function of resources. Thus, equity theory predicts that in the 4/3/2 Type 5 triad, when resources are assigned according to inputs, the two stronger parties should form a "conservative" coalition against

the weaker party, if such an action is necessary for them to obtain the greater reward which they "deserve" as a result of their greater contributions.

Equity theory may also be useful in understanding the tendency towards revolutionary coalition formation that has been demonstrated in past research. That is, when resources are assigned randomly rather than on the basis of inputs--the typical case in coalition formation research--the two weaker parties may perceive it as unfair for the stronger party to win merely by virtue of chance allocation. Thus, they may coalesce to prevent the occurrence of an inequitable, but likely, outcome. An equity theory interpretation in this instance is problematic, however, since inputs, although equal, are not clearly specified.

The present research tested the relative validity of Minimum Resource Theory and equity theory by examining the types of coalitions that are formed when work inputs are used as the basis for assigning resources. Also, to insure that the situation which was used in this examination approximated the relevant conditions that were present in past studies, coalition behavior was observed when, as in prior research, the correlation between resources and inputs was absent.

Method

Subjects and Recruitment

Subjects were 54 male undergraduates who were selected by chance from over 200 respondents to an advertisement in the Michigan State University student newspaper. The advertisement solicited persons who were interested in earning money by participating in "motivational research." Since respondents knew that money was to be their only payment, it was expected that this procedure would provide subjects who were reasonably motivated by this reward.

Pretask and Inputs

A pretask was used to provide subjects in the appropriate conditions (see below) with differential inputs. The pretask consisted of two instruments: a "Test of General Knowledge," in mimeograph, which subjects had to proofread; and a series of lines, curves, and circles, which subjects had to complete into meaningful pictures. This set of "incomplete pictures" appeared at different points in the test booklet, depending upon the input condition of the subjects; the drawing task was always placed so that it appeared about midway in the subjects' work period.

Inputs were manipulated through the duration of time for which subjects worked on the pretask. Some subjects worked for 2 hours, others for 1½ hours or 1 hour; the remainder did not work at all.

Bargaining Game

Triads played a game for monetary rewards that was similar to those used in past studies of coalition formation (e.g., Vinacke & Arkoff, 1957). Each member of a triad was given a small peg which he was to move along a cribbage board. There was a small cardboard flag with a numeral painted on it attached to each peg. One subject was given a peg marked with a 4, another was given a peg marked with a 3, and the third one that was marked with a 2.

Subjects were told to place their pegs at the same end of the board and move them when the experimenter said to do so. Each subject could, on a single move, advance his peg along the cribbage board the number of spaces that corresponded to the number on his flag (i.e., his resources). Thus, the subject with the peg marked 4 moved it four spaces each time, the subject with a resource weight of 3 moved his marker 3 spaces, and the remaining subject moved his peg 2 spaces.

Subjects were told that the party who won the game--i.e., who reached the other end of the board first--would be awarded $7, while the two losers would have to agree on how to split the second prize of $2. It was obvious that the person with 4 resources would always win, so, "to make the game more interesting, two players could combine forces by trading in their pegs for a single peg whose number was the sum of their individual resources." In order to do this, the two players had to agree on how they would divide the winner's share ($7), knowing that the excluded person would receive the second prize ($2).

Design

Subjects were randomly assigned to triads in one of three conditions. In the inputs relevant to resources condition, members of a triad were given resources for the bargaining game as a function of how long they had worked on the pretask. Thus, the subject who had worked for 2 hours was given 4 resource points, the subject who had worked for 1½ hours was given 3 points, and the subject who had worked for 1 hour was awarded 2 points. In the random resource condition, subjects, who had not worked on a pretask, were awarded 4, 3, or 2 points by chance. This condition is similar to the procedure used in many past studies of coalition formation. In the prepaid inputs condition, subjects were also assigned resources (4,3, or 2 points) as a function of their work inputs (2, 1½, or 1 hour), but they were paid a standard amount of money for their work before they played the game for monetary rewards. This last condition was included to insure that any differences in behavior that occurred in the first two conditions were not due to "demand characteristics" that might have been generated by the experimenter in the inputs condition assigning resources as a function of time worked.

Procedure

In the input conditions, subjects in a triad were scheduled so that they finished their work at the same time. Thus, the 1½ hour subject came

to the experiment about 30 minutes after the 2 hour subject, while the 1 hour subject was scheduled to arrive 1 hour later. All subjects in a triad worked on their pretask in separate rooms.

When the time to work on the pretask had elapsed--or, in the no-inputs condition, when the three subjects had arrived--the members of a triad were taken to a small room and seated around a rectangular table. At this point, in the prepaid-inputs condition, the subject who had worked 2 hours was given \$4, the 1½ hour subject was given \$3, and the 1 hour subject was given \$2.[3]

At this point, in all triads, the experimenter explained the bargaining game as outlined above. In both input conditions, he gave the person who had worked 2 hours the peg marked 4, the person who worked 1½ hours the peg marked 3, and the peg marked 2 to the person who worked 1 hour. He made sure that the subjects understood that resources were being distributed according to the amount of time that each person had worked (at a rate of 1 resource point per ½ hour of work). In the no-input condition, subjects selected among sealed envelopes which contained the pegs, so that assignment of resources obviously was determined by chance.

In all triads, the actual winner's share (\$7) and the loser's share (\$2) were always placed on the table before the game began so that subjects could see that the experimenter was serious about rewarding them in this manner. After the game was explained, including the possibility of forming "combinations," the experimenter answered any questions. Then he told the players to discuss among themselves, before the first "move," whether or not they would form a combination, and, if so, with whom, and how the winner's share was going to be divided. He then remained silent until two of the players formed a coalition and agreed on a division of their reward. Thus, he did not interact with the subjects until, as he had explained to them, two of them handed in their pegs in exchange for a peg whose number was the sum of their individual resources; this action signified that a binding coalition had been formed.

When a coalition was formed, the experimenter--with the subjects' permission--declared its members to be the winners without having the players go through the motions of moving their pegs along the board. He then made sure that the members of the coalition divided the $7 as they had agreed, and that the isolate received his $2. Finally, subjects were asked to write down individually why they behaved as they did in the game. When they completed this task, the experimenter thanked them for participating and allowed them to leave.

Results

There were six triads assigned to each condition of the design. Table 1 presents the frequency of each type of coalition that was formed in the three

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Insert Table 1 about here

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conditions. This array suggests strongly that the prediction derived from equity theory was more accurate than was the hypothesis that Gamson (1964) generated from Minimum Resource Theory, since conservative coalitions were formed in all six triads assigned to the inputs condition. Table 1 also reveals that the procedure used in the present study generated results that were equivalent to the usual findings of prior research in the two control conditions (i.e., in the no-inputs and the inputs-prepaid conditions), since subjects in these treatments tended to form the more typical, revolutionary coalition.

Moreover, statistical analyses strongly supported these conclusions. An analysis of variance, which was performed on the sum of the resources of the coalition members, revealed an overall treatment effect ($F = 8.90$, $df = 2/15$, $p < .005$). Further analysis indicated that (a) there was essentially no difference in coalition formation between the no-inputs and the inputs-prepaid conditions ($F = .18$, $df = 1/15$); however, as predicted by equity theory--but

contrary to Gamson's assertion--the coalitions that were formed in the inputs condition were considerably more conservative than those in the other two treatments (F = 17.62, df = 2/15, $p < .01$, Scheffé test).[4]

Analysis of the coalitions formed in the two control conditions through a binomial test indicated that, as in past research, revolutionary (2-3) coalitions tended to be formed more often than would be expected by chance ($p < .064$). Further, the exact distribution of coalitions in these two conditions approximates well that predicted by Walker (1973) in his refinement of Caplow's (1956) theory; Table 2 presents these predicted and observed frequencies.

Insert Table 2 about here

Finally, the subjects' postgame responses were examined to determine the extent to which they reported being concerned with equity, fairness, etc. when playing the game. This examination revealed that only one subject of the 36 assigned to the control conditions mentioned being concerned with equity, while 14 of the 18 subjects in the inputs condition did so, a highly significant difference (X^2 = 29.25, df = 1, $p < .0001$).[5] These results are particularly striking in their support for equity theory, given that the question--Why did you behave the way you did in the game?--was completely open-ended and, thus, subjects could have responded with a wide variety of reasons.

Discussion

Results of the present research provided strong support for the position that the norm of equity can serve as the basis for coalition formation. These findings, and those of past research (e.g., Messé, 1971), indicate that persons use equity to guide their behavior in bargaining situations. On the other hand, other variables--e.g., concerns with competition--become more salient in circumstances such as the two control conditions in the present study, in which the norm of equity does not appear as applicable.

The results clearly refute the hypothesis that Gamson (1964) derived from Minimum Resource Theory. This perspective was especially relevant to the present research, since it proposes explicitly that there exists a relationship between resource salience and coalition formation. It should be noted, however, that no theory of coalition formation (cf., Caplow, 1968; Komorita & Chertkoff, 1973; Walker, 1973) predicts or explains adequately the formation of conservative coalitions that occurred in the input condition of the present research.

The failure of these theories seems to be a result of an assumption that persons, especially males, tend to approach situations of potential conflict with a competitive orientation. Past research (e.g., Benton, 1971; Messé, 1971; Messé, Dawson, & Lane, 1973; Pepitone, 1971), however, has demonstrated that this assumption may not be valid for many interpersonal situations, especially those in which it is possible to distribute rewards in a manner that is congruent with perceived inputs. This was the case in the inputs condition of the present study, so, as results indicated, theories that assume a competitive orientation cannot predict accurately subjects' responses.

Moreover, the results cannot be explained adequately in terms of demand characteristics. While it was possible that subjects in the inputs condition would deduce from the resource assignment that they were "expected" to form conservative coalitions, two important considerations render such an explanation implausible. First, subjects were recruited through the promise of money as their sole reward. Given this, it seems unlikely that they would behave in ways that could prove costly to them just to please the experimenter. Second, resources were assigned in the same manner in the inputs-prepaid condition, but subjects' responses differed substantially from those in the inputs condition. Thus, any demand characteristics that might have been present

should have been essentially the same in the two inputs conditions, but, since coalition formation behavior differed, it is unlikely that such characteristics--if they were present at all--affected responses.

On the other hand, previous theories of coalition formation--especially Walker (1973)--were predictive of the behavior that was emitted in both the inputs-prepaid and the no-inputs conditions. The purpose of the present research was not to differentiate among them, but rather, to demonstrate that, as a class of theories, they are most applicable in situations in which persons should have a competitive orientation. The present study and prior research lead to the conjecture that a competitive orientation will arise primarily in two situations. First, it appears that this orientation is generated when explicit rewards are trivial and/or not motivating in themselves (e.g., Vinacke & Arkoff, 1956). In this case, subjects--perhaps to relieve boredom--may convert the situation to a zero-sum situation with little real cost. Second, competitive tendencies also can occur when the structures of inputs and rewards are such that an equitable solution is impossible. Lane & Messé (1972), for example, have demonstrated that persons become self-interested when they distribute an amount of reward that is either insufficient or oversufficient to provide everyone with a fair share.

It is likely that the two control conditions of the present research generated a competitive orientation in subjects, since both were situations of oversufficient rewards. The no-input condition provided subjects with $9, a rather large amount of money for about 10 minutes work. The inputs-prepaid condition gave subjects $9 in excess of the equitable amounts that were awarded to them previously.

An important issue that remains to be considered fully is the extent to which conditions in the "real-world" typically favor an equitable or a competitive orientation. While a definitive answer to this question must await

extensive empirical exploration, it appears that a reasonable estimate is that the norm of equity is an important concern in most interpersonal situations. This speculation follows from the argument, developed by Thibaut and Kelley (1959, pp. 132-135) and others, that norms are widely used since they facilitate productive social behavior. Also, it seems reasonable that persons, in general, would believe in a just world in which, typically, differences in resources have some appropriate and rational basis.

Thus, for example, the contemporary American family--viewed as a father-mother-child triad--often may be characterized by a conservative, parental coalition. In fact, Fleck (1971), argues that revolutionary parent-child coalitions are associated with behavior pathologies in the family--an assertion with which Caplow (1968, pp. 66-67) appears to disagree, however.

This, and other points of contention, of course, cannot be resolved without relevant data. It is clear, however, from the findings of this and past research on coalition formation that there are factors which influence the type of coalition that characteristically is formed. Thus, it now appears to be appropriate to broaden the scope of the empirical and theoretical work in this field--from its present rather narrow focus on why revolutionary coalitions tend to be formed under conditions of equal pivotal power--to include the more general issue of when conservative or revolutionary coalitions are more likely to occur.

References

Adams, J. S. Inequity in social exchange. In L. Berkowitz (Ed.), Advances in experimental social psychology. Vol. 2. New York: Academic Press, 1965.

Benton, A. A. Productivity, distributive justice, and bargaining among children. Journal of Personality and Social Psychology, 1971, 18, 68-78.

Caplow, T. A theory of coalitions in the triad. American Sociological Review, 1956, 21, 489-493.

Caplow, T. Two against one: Coalitions in triads. Englewood Cliffs, N.J.: Prentice-Hall, 1968.

Fleck, S. Some basic aspects of family pathology. In B. Wolman (Ed.), Manual of child psychopathology. New York: McGraw-Hill, 1972.

Gamson, W. A. A theory of coalition formation. American Sociological Review, 1961, 26, 373-382.

Gamson, W. A. Experimental studies of coalition formation. In L. Berkowitz (Ed.), Advances in experimental social psychology. Vol. 1. New York: Academic Press, 1964.

Homans, G. C. Social behavior: Its elementary forms. New York: Harcourt, Brace & World, 1961.

Kelley, H. H., and Arrowood, A. J. Coalitions in the triad: Critique and experiment. Sociometry, 1960, 23, 231-244.

Komorita, S. S., and Chertkoff, J. M. A bargaining theory of coalition formation. Psychological Review, 1973, 80, 149-162.

Lane, I. M., and Messé, L. A. The distribution of insufficient, sufficient, and oversufficient rewards: A clarification of equity theory. Journal of Personality and Social Psychology, 1972, 21, 228-233.

Lane, I. M., Messé, L. A., & Phillips, J. L. Differential inputs as a determinant in the selection of a distributor of rewards. Psychonomic Science, 1971, 22, 228-229.

Leventhal, G. S., and Michaels, J. W. Extending the equity model: Perception of inputs and allocation of reward as a function of duration and quantity of performance. Journal of Personality and Social Psychology, 1969, 12, 303-309.

Messé, L. A. Equity in bilateral bargaining. Journal of Personality and Social Psychology, 1971, 17, 287-291.

Messé, L. A., Dawson, J. E., & Lane, I. M. Equity as a mediator of the effect of reward level on behavior in the Prisoner's Dilemma game. Journal of Personality and Social Psychology, 1973, 26, 60-65.

Pepitone, A. The role of justice in interdependent decision making. Journal of Experimental Social Psychology, 1971, 7, 144-156.

Thibaut, J. W., and Kelley, H. H. The social psychology of groups. New York: Wiley, 1959.

Vinacke, W. E. Variables in experimental games: Toward a field theory. Psychological Bulletin, 1969, 71, 293-318.

Vinacke, W. E., and Arkoff, A. An experimental study of coalitions in the triad. American Sociological Review, 1957, 22, 406-414.

Walker, M. B. Caplow's theory of coalitions in the triad reconsidered. Journal of Personality and Social Psychology, 1973, 27, 409-412.

Footnotes

1. This paper is an elaboration of a paper presented at the American Psychological Association Convention, August 1974. This research was supported by the Cooperation/Conflict Research Group of the Computer Institute for Social Science Research, Michigan State University.

2. Requests for reprints should be sent to Lawrence A. Messé, Department of Psychology, Michigan State University, East Lansing, Michigan, 48824.

3. Prior research (Lane & Messé, 1972) has established that undergraduates perceive $2/hour to be reasonably equitable pay.

4. It should be noted that examination of the data through Fisher's Exact Tests--which seemed to be a less efficient but somewhat more conservative procedure than ANOVA--yielded the same findings; that is, counting only 3-2 coalitions as revolutionary, there was little difference between the no-input and the prepaid-input conditions, but these treatments, combined, were significantly different from the inputs condition.

5. It should be noted as well that all six coalitions in the inputs condition divided the winner's share equitably (i.e., $4-$3). On the other hand, coalitions in the other conditions tended to divide the reward equally.

Table 1

Coalitions Formed in Each Input Condition

Input Condition	Coalition Type		
	2-3[a]	2-4[a]	3-4[a]
Inputs	0	0	6
Inputs-prepaid	3	2	1
No-inputs	4	1	1

[a]This designates the individual resources of the members of the coalition that was formed.

Table 2

Observed and Predicted Coalition Formation

in the No-Inputs and Inputs-Prepaid Conditions

	Coalition Type			
	2-3	2-4	3-4	
Observed	7	3	2	
Predicted	7	4	1	